

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**Mosaic Fertilizer, LLC
Uncle Sam Plant
Uncle Sam, St. James Parish, Louisiana
Agency Interest Number: 2532
Activity Number: PER19960001
Proposed Permit Number: 2560-00004-V0**

I. APPLICANT

Company:
Mosaic Fertilizer, LLC
7250 Highway 44
Uncle Sam, LA 70792

Facility:
Mosaic Fertilizer, LLC
7250 Highway 44
Uncle Sam, LA 70792

30° 2' 14" Latitude, 90° 49' 39" Longitude

II. FACILITY AND CURRENT PERMIT STATUS

Mosaic Fertilizer, LLC's Uncle Sam plant consists of three sulfuric acid units (Trains), two phosphoric acid units, a silicon tetrafluoride unit, and two packaged steam boilers. The facility recovered uranium (as uranium oxide) from phosphoric acid. The Uranium recovery plant was shut down in late 1998 and has been dismantled.

Descriptions of the individual processes are provided below:

Sulfuric Acid Plant

Train "A", is a single absorption plant capable of producing more than 2,000 tons per day of sulfuric acid (as 100% H₂SO₄). Trains "D" and "E" are double absorption plants capable of producing more than 2,000 and 3,800 tons per day of sulfuric acid (as 100% H₂SO₄), respectively.

Each train manufactures sulfuric acid by the contact process. In the contact process, molten elemental sulfur is fed into a combustion chamber and burnt in clean dry air. The gases from the combustion chamber are cooled and routed to the solid catalyst converter. Sulfur dioxide formed in the combustion chamber is converted to sulfur trioxide in an exothermic reaction. After cooling, the converter exit gas enters an

Mosaic Fertilizer, LLC
Uncle Sam Plant
Uncle Sam, St. James Parish, Louisiana
Agency Interest Number: 2425
Activity Number: PER19960001
Proposed Permit Number: 2560-00021-V0

absorption tower where sulfur trioxide is absorbed into sulfuric acid and combined with water to form additional H_2SO_4 . Sulfuric acid produced in this plant is used as raw material for the production of phosphoric acid.

There are no modifications proposed for this area.

Phosphoric Acid Plant

Phosphoric acid is produced in two units at the Uncle Sam Plant. The North and South Phosphate Rock Attack Systems are each capable of producing 1600 tons of phosphoric acid (as P_2O_5) per day. Both systems utilize the wet process of phosphoric acid production. Finely ground phosphate rock is decomposed in a reactor in the presence of sulfuric acid. The reaction slurry is filtered, producing a nominal 30% acid solution. This solution is concentrated to 54% through evaporation.

There are no modifications proposed for this area.

Hydrofluorosilicic acid is a byproduct from the phosphoric acid plant which is again reacted with sulfuric acid to produce silicon tetrafluoride gas. Fluoride emissions from this unit are diverted to the phosphoric acid plant fluoride scrubber system.

There are no modifications proposed for this area.

Sulfuric acid, phosphoric acid, and fluorosilicic acid are stored in fixed roof tanks, and silicon tetrafluoride is directly loaded in tank trucks for transfer.

Two 100,000 lb/hr packaged steam boilers No. 1 and No. 2, are used for supplemental steam. Natural gas is the primary fuel. No. 2 Fuel Oil was previously a backup fuel, but the boilers have been modified to remove the equipment used to supply the No. 2 Fuel Oil.

There are no modifications proposed for this area.

Maintenance area

The Maintenance Area includes utilities, maintenance support activities and a variety of materials handling activities. Lime is stored and used for water treatment. Utilities operations provide a number of portable diesel-fired equipment, fuel storage and emergency diesel-fired equipment for the Uncle Sam Plant operations.

There are no modifications proposed for this area.

**Mosaic Fertilizer, LLC
Uncle Sam Plant
Uncle Sam, St. James Parish, Louisiana
Agency Interest Number: 2425
Activity Number: PER19960001
Proposed Permit Number: 2560-00021-V0**

III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application and Emission Inventory Questionnaire were submitted by IMC-Agrico Company on October 12, 1996 requesting a Part 70 operating permit. Additional information dated January 11, 1999, May 19, 1999, April 10, 2002, and June 7, 2002, were also received. A complete permit reconciliation application was submitted on January 23, 2006, which supersedes all previous submittals.

Project

There are no modifications proposed for the Sulfuric and Phosphoric Acid Plant areas. The Uranium Recovery Plant was shut down in late 1998, has been dismantled and will not be permitted. The equipment associated with the area called Maintenance has always existed, but is administratively being grouped in the newly designated area.

Proposed Permit

Permit 2560-00021-V0 will be the initial Part 70 operating permit for the Uncle Sam Plant.

Estimated emissions in tons per year (tpy) are as follows:

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
PM ₁₀	39.85	82.72	+42.87
SO ₂	14,090.39	14,104.67	+14.28
NO _x	708.30	518.39	-189.91
CO	42.17	107.62	+65.45
VOC	5.03	14.94	+9.91

LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
Ammonia	3.46	0.0	-3.46
Chlorine	0.40	<0.001	-0.40
Hydrogen Sulfide	17.75	6.39	-11.36
Hydrofluoric acid (Hydrogen Fluoride)	8.64	1.68	-6.96
Sulfuric Acid	341.21	341.29	+0.08
Phosphoric Acid (Not a TAP)	Not reported	82.38	+82.38

**Mosaic Fertilizer, LLC
Uncle Sam Plant
Uncle Sam, St. James Parish, Louisiana
Agency Interest Number: 2425
Activity Number: PER19960001
Proposed Permit Number: 2560-00021-V0**

LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):

Pollutant	Before	After	Change
Sulfur Trioxide	8.04	8.05	+0.01
Total Fluorides (includes HF from above)	28.06	16.24	-11.82
Total	399.52	456.03	

IV REGULATORY ANALYSIS

Louisiana Air Quality Regulations and NSPS

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or Table 2 of the draft Air Permit Briefing Sheet. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the draft permit, or explained in Table 2 of the draft Air Permit Briefing Sheet.

Currently New Source Performance Standards (NSPS), 40 CFR 60 Subpart H is not applicable to the "A" sulfuric acid production line and does not apply to ancillary units such as storage tanks. The facility was built prior to the NSPS applicability date of August 17, 1971. The "D" and "E" sulfuric acid trains are subject to the NSPS.

Currently New Source Performance Standards (NSPS), 40 CFR 60 Subpart T is not applicable to the phosphoric acid production lines and does not apply to ancillary units such as storage tanks. The facilities were built prior to the NSPS applicability date of October 22, 1974. The phosphoric acid trains are subject to the LAC 33:III.2305.D.1 emission limitation of 0.10 lbs total fluoride per ton of equivalent P₂O₅ feed.

Prevention of Significant Deterioration/Nonattainment Review

The particulate matter emission increases include over 51 tons per year that are a reconciliation from one previously unpermitted source. Therefore the changes, including emission reductions, are below the PSD significance level.

Streamlined Equipment Leak Monitoring Program

The facility has no programs being streamlined.

MACT and NESHAP Requirements

This facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. All pollutants are Class III TAPs only. MACT is not required. Emissions of all toxic air pollutants listed in LAC 33:III.5112, Table 51.1 or 51.3 shall be included in the Annual Emissions Report. (TEDI)

Mosaic Fertilizer, LLC
Uncle Sam Plant
Uncle Sam, St. James Parish, Louisiana
Agency Interest Number: 2425
Activity Number: PER19960001
Proposed Permit Number: 2560-00021-V0

The current application indicates that the facility is not a major source of hydrogen fluoride. In addition, hydrogen sulfide and sulfuric acid are not federal hazardous air pollutants (HAPs). Therefore, the remaining HAP pollutants are below the 10 tpy for any single pollutant and the 25 tpy for aggregated pollutants. As such, 40 CFR 63 Subpart AA, National Emission Standards for Hazardous Air Pollutants from Phosphoric Acid Manufacturing Plants is not applicable.

Air Quality Analysis

Dispersion Model(s) Used: ISCSTC (Screen)

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Toxic Air Pollutant Ambient Air Quality Standard or (National Ambient Air Quality Standard {NAAQS})
SO ₂	3 hour	898.00 µg/m ³	1,300.00 µg/m ³
SO ₂	24 hour	246.00 µg/m ³	365.00 µg/m ³
SO ₂	Annual	15.87 µg/m ³	80.00 µg/m ³
Sulfuric Acid	Annual	8.9 µg/m ³	23.8 µg/m ³

General Condition XVII Activities

The facility has not reported any General Condition XVII activities.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

A permit shield was not requested.

VI. PERIODIC MONITORING

Compliance Assurance Monitoring, 40 CFR 64.5 Deadlines for Submittals allows the facility to submit the Compliance Assurance Monitoring plan at the first renewal of the Part 70 Operating permit.

Mosaic Fertilizer, LLC
Uncle Sam Plant
Uncle Sam, St. James Parish, Louisiana
Agency Interest Number: 2425
Activity Number: PER19960001
Proposed Permit Number: 2560-00021-V0

VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H₂S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C (“Prevention of Significant Deterioration of Air Quality”) and D (“Nonattainment New Source Review”).

Nitrogen Oxides (NO_x) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀ – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air

**Mosaic Fertilizer, LLC
Uncle Sam Plant
Uncle Sam, St. James Parish, Louisiana
Agency Interest Number: 2425
Activity Number: PER19960001
Proposed Permit Number: 2560-00021-V0**

Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO₂) – An oxide of sulfur.

Sulfuric Acid (H₂SO₄) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.